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NEW EVIDENCE ON SHARE PRICES AND THE STOCK MARKET TRENDS: A CASE OF SELECTED US FIRMS, THE S&P 500 AND THE DOW JONES

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Abstract:
Analysis of share prices and stock market indexes has actually attracted the attention of financial analysts, capital market participants and researchers alike. This study is based on share price data on selected companies listed on the New York Stock Exchange as well as the market activities of major stock market indexes in the US. The data collated were on monthly basis from January 2000 to February 2017. Trends of these series were plotted and further emphasis highlighted with a descriptive statistics. Share prices and stock market performance trends over the period appear similar. There were perceived signs of stability between January 2000 and 2008:Q2. However, the adverse effects of the 2008 global financial crisis were visible and significant as all the series nosedived, notably, between 2008:Q3 and 2009:Q2. From our evidence, relative recovery from the crisis began to be felt from July 2009. Thereafter, the pace of growth in performances across the series has been quite impressive. Both the covariance and principal components analysis results indicate that stock market performance and share prices have direct relationship. The covariance results further showed that the relations so revealed are positive and significant.

JEL: C32, F36, G15, E60

Keywords: Share price, S&P 500, Dow Jones, principal component analysis

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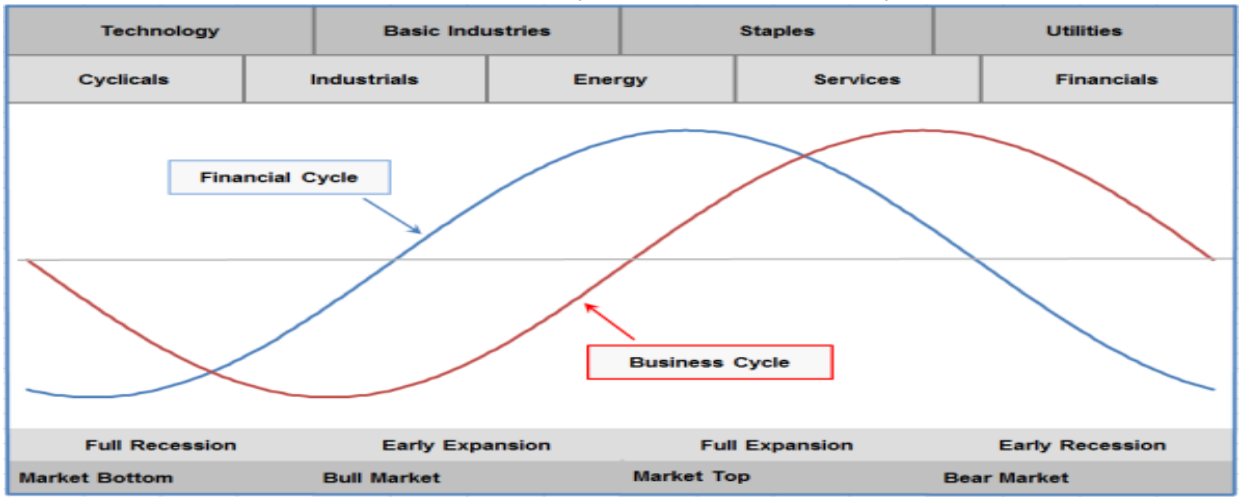
1. Introduction

Stock prices have been widely believed to be a reliable indicator of economic activity. In United States, studies show that increase in stock prices is usually accompanied by strong economic recovery. Stock prices may have some predictive effects on future changes in the economy and may yet also have direct influence on economic activities (Pearce, 1983). A number of discourses on financial markets revealed that stock market and the economy are closely related to each other (see Josh, 2015; Brahmasrene, 2007; Lawal and Okunola, 2012; Wang and Ajit, n.d; Nazir, Gilani and Nawaz, 2010; Caporale and Spagnolo (2011). Jareno and Negrut (2016) support this assertion and maintain that the association between stock market and the real economy is evident but expressed concern that the causal link between the two remains a subject of controversy. It is a conventionally held view that a positive relationship exist between the capital market and the real economy. This goes to entail that in the long run, investing in the stock market in any economy would be worthwhile specially when the capital market of such countries is well developed, efficient and have compositions of stocks of companies with good prospects and strong fundamental position (Gajdka and Pietraszewski, 2016).

Figure 1: Economic cycle and Stock market cycle



Source: Own preparation based on www.financial-market-commentary.com

Figure 1 explains the relationship between the stock market of a country and the dynamics of the domestic economy. Stock prices are leading indicator of business cycles. The business cycle is an irregular pattern that underlies the time path of aggregate economic activity. Usually, the stock market (or financial cycle) moves according to the business or economic cycle—between six and twelve months at a time (Jareno and Negrut, 2016).

Given the above postulation, some of the earlier studies aimed at determining the relationship between stock market and the economy used annual or quarterly data

while traditionally adopting the gross domestic product as the indicator of economic performance (see Hettiarachchi, 2014; Alexius and Spang, 2015; Peng, Cui, Qin and Greonewold, n.d; Auret and Golding, 2012). However, this study takes some exceptions. First, other than the conventional real gross domestic product, we adopt the Standard & Poor's Composite Index (S&P500) and the Dow Jones Industrial Average (DJIA) as proxies for the economy and stock market indicator vis-à-vis share prices of selected firms listed in the New York Stock Exchange (NYSE) with the aim of determining the correlation between the two series. Second, the data frequency is on monthly basis, and the trends will be employed to assess the actual periods of impact from the 2008 global financial crisis and to also ascertain the points of recovery.

The selected companies include Apple Inc., Microsoft, Pfizer Inc., and the Ford Motors Company. S&P500 and the Dow Jones (DJ) are the key stock market indexes in US. The former is considered as more comprehensive than the latter as it captures the economy better. While DJ included 30 largest companies in US in its composite, S&P500 included 500 largest listed companies. Thus, the S&P 500 stock index represents the market value of all outstanding common shares of 500 firms selected by Standard and Poor's. The cumulative market value equals approximately 80% of the aggregate value of NYSE-listed stocks (Kawaller, Koch, and Koch, 1988).

2. Theory and Empirics

Heaton and Lucas (1999) expound the theoretical model of the Gordon growth model. This model is a simple and fundamentals-based approach to predicting stock prices. In this model, stock prices are largely determined by the discounted present value of future expected dividend payments. Dividends are usually replaced by earnings, assuming a constant dividend pay-out ratio. The discount factor can be divided into a risk-free component and an equity risk premium. This present value model for the share price foretells a forward-looking passive, or indicator role for stock prices. Higher stock prices are a reflection of an increase in the discounted expected earnings. This potentially provides useful information about future economic growth. Stock prices play significant role in the economy via various channels**.** For instance, increase in equity prices provide added incentive for firms and households that own shares through positive wealth effect. Stock prices also affect the real economy through a confidence channel. This arises from the fact that stock prices remain a measure of the state of the economy. Higher confidence level of firms and household leads to reduction in the uncertainty or apprehension they may have about future state of the economy (ECB, 2012).

Stock prices therefore fluctuate in line with some underlying fundamentals. Stocks of financially sound companies are indexed in the Standard and Poor’s 500

composite. The main objective of S&P 500 index is to remain the performance benchmark for U.S. equity markets. The major advantage of using the S&P 500 over Dow Jones Industrial Average (DJIA) is that it is more representative of the entire market since it contains a larger number of stocks (Taulbee, 1997.). Usually, index funds and diverse investors buy stock of companies indexed in the S&P 500. These companies are blue chip with large trading volume. Routinely, the S&P 500 deletes a stock from its index and adds another stock in its place. The new stock added would essentially have a strong market value within the industry that it represents**.** S&P normally gives a 5 day notice before that addition and deletion of a stock from its index (see Lynch and Mendenhall, 1997). If investors can correctly conceive the scenario of stock addition and deletion in an industry, they would probably make profit by investing in those industries with largest price movement. On an impending announcement, ideally, speculators purchase stock of the soon to be added company prior to its addition to the index and sell the deletion (Malic, n.d.)**.**

From the foregoing, stock market efficiency and the rate of capitalisation in developed countries has been on the increase. This underscores the importance of relation between the financial sector and real macroeconomic aggregates. Savings-investment decisions as well as financial condition are linked to profit and business condition at different points, and are captured in stock prices (Hassapis and Kalyvitis, 2001). Apergis and Lambrinidis (2011) assert that stock market has become highly integrated. A number of empirical studies have actually sought to explore the interrelationship between stock market and the real economy.

Masoud (2013) used annual data from developed countries to explore the causal link between stock market performance and growth. In line with Jareno and Negrut (2016), the results suggest that efficient stock market drives growth, both in short run and long run (see also Paramanti and Gupta, 2011; Duca, 2007). The findings further revealed an indirect transmission mechanism running from stock market development to investment. Hassapis and Kalyvitis (2001) equally argued that real stock price changes are positively and strongly related to output growth. However, Gajdka and Pietraszewski (2016) argue that the link between stock market performance and the growth in the world economies is unclear whereas Agrawalla (n.d) contends that share price is not reflective of an improvement in the health of the economy.

3. Data and Analyses

Standard and Poor's 500 (S&P 500), the Dow Jones Industrial Average (DJIA) and the NASDQ are adopted in the study as indicators of stock market. The data is sourced from YahooFinance (www.finance.yahoo.com). S&P 500 constitutes 500 blue chip companies whose shares is publicly traded in the New York Stock Exchange

(NYSE).While DJIA ranks second to SP 500 and is a composite of 30 largest listed firms in US. NASDQ composite is an index of more than 3000 stocks listed on the NASDQ exchange. Data on share prices of selected listed firms were also collated. These companies include Apple Inc., Pfizer Inc., Microsoft and Ford Motors Company. Movement in these sampled share prices will be analyzed vis-à-vis the major stock market indexes. All data are on monthly basis and in current USD.

Table 1: Descriptive Statistics

	S&P500	DJIA	NASDQ	PFZ	AAPL	MSFT	FMC
Mean	1388.112	12315.88	2848.180	28.22095	39.15825	32.24402	12.84910
Median	1292.280	11150.22	2431.770	28.36000	20.35000	28.52000	12.42000
Maximum	2363.640	20812.24	5825.440	48.00000	136.9900	64.65000	28.19000
Minimum	735.0900	7062.930	1172.060	12.31000	1.010000	16.15000	1.870000
Std. Dev.	376.2783	3072.643	1159.431	7.971926	40.97760	9.952969	5.375155
Sum	262353.1	2327701.	538306.1	5333.760	7400.910	6094.120	2428.480
Observations	189	189	189	189	189	189	189

Source: Authors, 2017

Table 1 above presents the statistical description of all the series. S&P 500 averaged 1388 while Dow Jones (DJIA) averaged 12316 and recorded the highest rise in February 2017 at 20812. The share prices of the respective companies maintained a relatively stable trend between 2000 and 2007. However, share prices and the stock market indicators experienced a deepest fall and worst performance between September 2008 and June 2009. This is apparently due to the 2008 global financial crisis that plagued global financial system. Recovery however actually took effect from the 2009:Q3 and the trend has since largely been impressive (see figures 1 & 2).

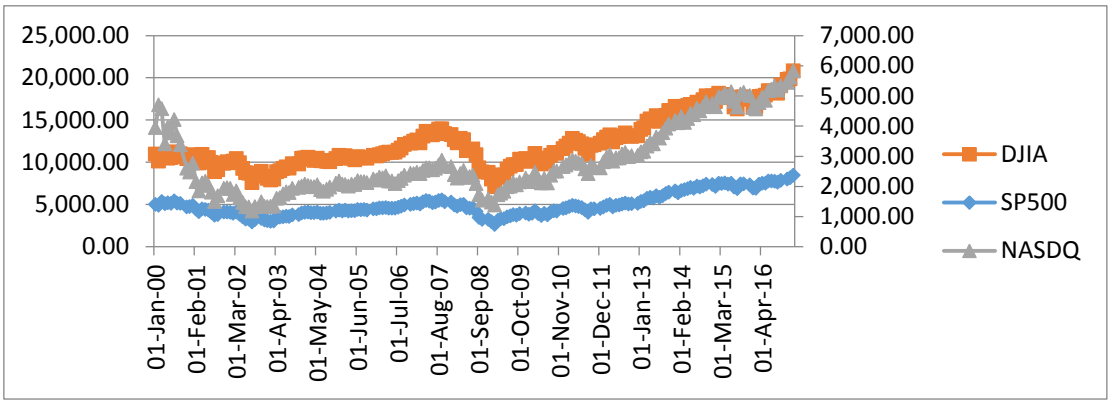


Figure 1: Stock Market Trends: 2000M01-2017M02

Source: Authors', 2017

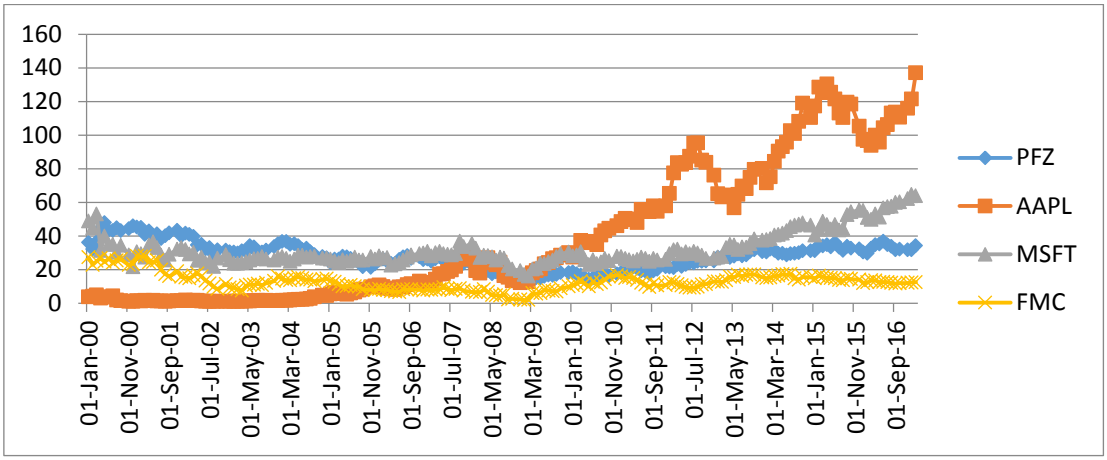


Figure 1: Stock price Trends: 2000M01-2017M02

Source: Authors', 2017

Table 2: Covariance and Correlation Analysis

Covariance Analysis: Ordinary
Date: 03/09/17 Time: 10:5
Sample: 2000M01 2017M02
Included observations: 189

Covariance Correlation t-Statistic Probability	SP500	DJIA	NASDQ
PFZ	837.5216	3922.511	2470.747
	0.280690	0.160988	0.268735
	3.999156	2.230569	3.815242
	0.0001	0.0269	0.0002
AAPL	12931.06	112065.2	40075.80
	0.843106	0.894780	0.847998
	21.44004	27.40363	21.87964
	0.0000	0.0000	0.0000
MSFT	3317.312	25703.33	10426.76
	0.890489	0.844945	0.908356
	26.76287	21.60307	29.70263
	0.0000	0.0000	0.0000
FMC	486.3937	2165.552	1994.735
	0.241764	0.131816	0.321776
	3.407147	1.818429	4.647384
	0.0008	0.0706	0.0000

Source: Authors', 2017

Table 2 above basically explains the relative association between share price movements and the stock market performance. The results show that the relationships between the two related series are largely positive and strong (or significant). In other words, rise in share prices is a determinant of stock market performance.

Table 3: Components Analysis

Principal Components Analysis
Date: 03/09/17 Time: 11:12
Sample: 2000M01 2017M02
Included observations: 189
Computed using: Ordinary correlations
Extracting 7 of 7 possible components

Ordinary correlations:

	SP500	DJIA	NASDQ	PFZ	AAPL	MSFT	FMC
SP500	1.000000						
DJIA	0.980332	1.000000					
NASDQ	0.958875	0.920447	1.000000				
PFZ	0.280690	0.160988	0.268735	1.000000			
AAPL	0.843106	0.894780	0.847998	-0.046992	1.000000		
MSFT	0.890489	0.844945	0.908356	0.394478	0.726040	1.000000	
FMC	0.241764	0.131816	0.321776	0.737706	0.025786	0.315913	1.000000

Source: Authors', 2017

Table 3 above corroborates the results in Table 2. The results confirm the results of the covariance analysis. Moreover, Figures 3 to 6 below shed more light on the trends between the share prices of the individual companies and the respective stock market indices. It is noteworthy that each of the figures below relatively indicates the same periods of downturn as well as points of recovery in the financial cycle.

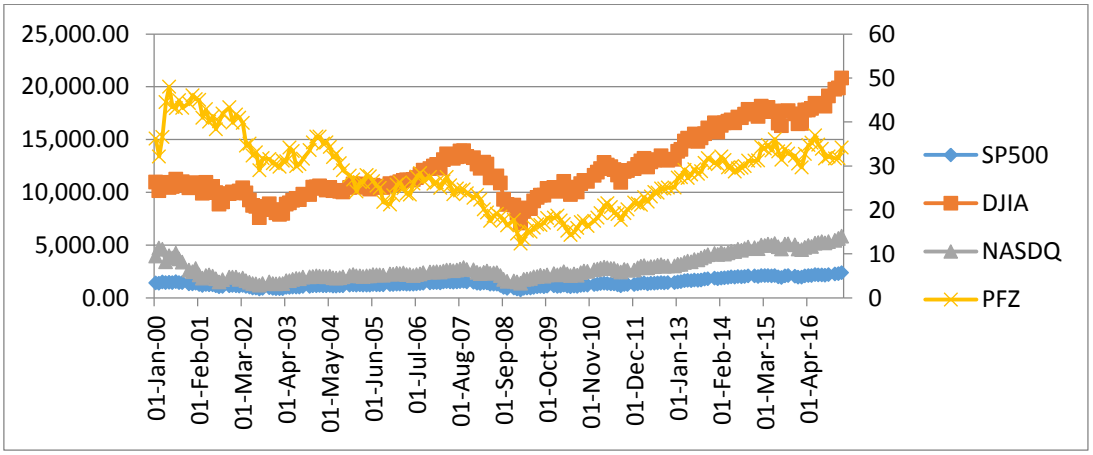


Figure 3: Pfizer Inc (PFZ) share prices relative to the Stock Market Indexes

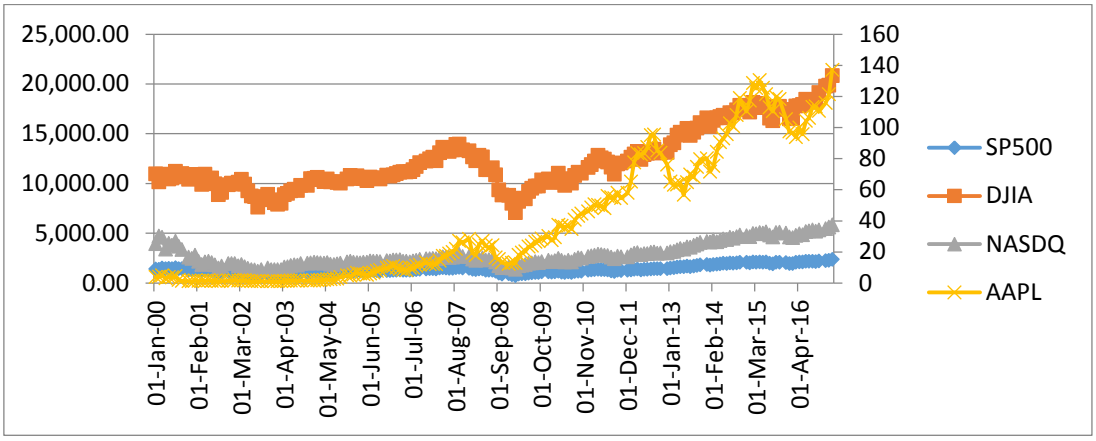


Figure 4: Apple Inc (AAPL) share prices relative to the Stock Market Indexes

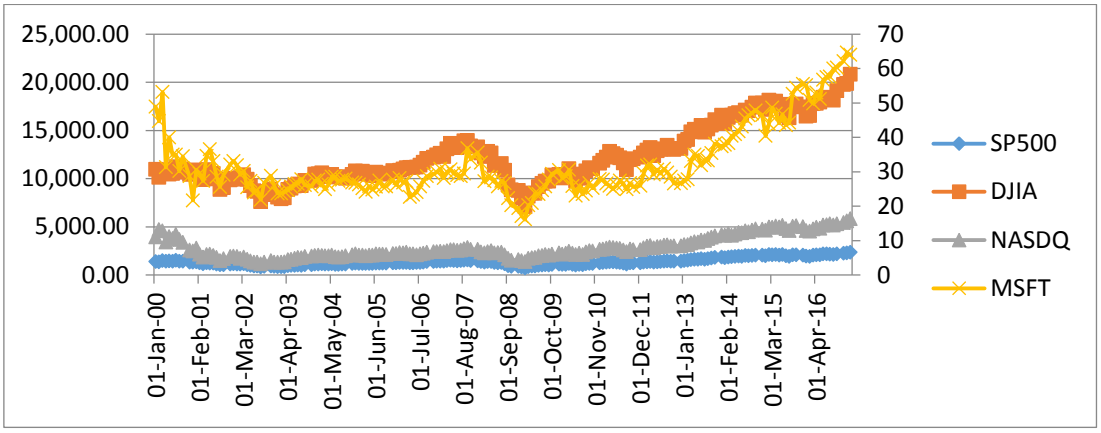


Figure 5: Microsoft (MSFT) share prices relative to the Stock Market Indexes

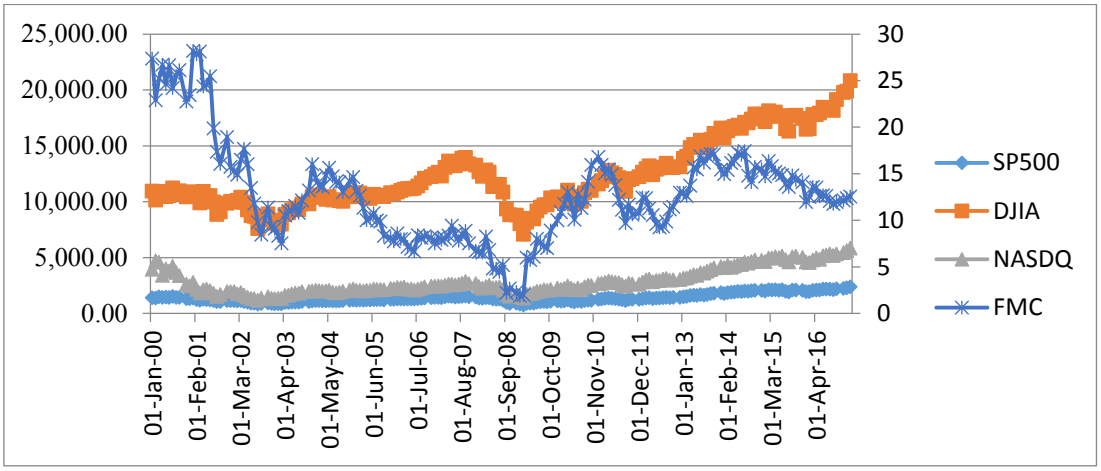


Figure 6: Ford Motors Company (FMC) share prices relative to the Stock Market Indexes

4. Conclusion

This study presents new evidence on share prices and the stock market trends in the context of selected US Firms, and the S&P 500 and the DOW Jones. The study is based on monthly share price data on selected companies listed on the New York Stock Exchange as well the monthly market activities of major stock market indexes in the US. The data collated were from January 2000 to February 2017. Trends of these series showed that there were signs of stability between January 2000 and end of second quarter of 2008. However, the adverse effects of the 2008 global financial crisis were visible and significant as all the indicators nosedived, notably between 2008:Q3 and 2009:Q2. Relative recovery from the crisis began to be felt from July 2009. Both the covariance and principal components analysis result indicates that stock market performance and share prices have direct relationship. The covariance results further showed that the relations revealed are positive and significant. The implication of the finding is that stock market movements is a reflective share price dynamics. Good performing stocks have positive implications on the larger stock market and vice versa.

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